



Bedford
Nursery Schools
Federation

Mathematics

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Introduction

At Bedford Nursery Schools Federation, mathematical skills are developed both within children's self-chosen activities as well as in adult-directed group times in real and meaningful contexts.

We believe that every child is entitled to a high-quality mathematics education, to support their understanding of the world and give them an appreciation of the beauty and power of mathematics and a sense of enjoyment and curiosity about the subject.

We support children to:

- develop positive attitudes and interests in mathematics
- develop their mathematical reasoning skills by providing them with opportunities to talk to each other and to adults-about their thinking in a wide range of situations
- develop their number sense through a broad range of experiences
- learn key early mathematics concepts and skills, which need to be understood before they begin to calculate. These include subitising and patterning
- introduce five and ten frames to begin their journey of understanding calculation, and images to support mental maths strategies
- learn maths material really deeply by adding executive challenge

Through covering all aspects of the Mathematics Educational Programme we ensure that the children receive a broad and balanced mathematical curriculum. We use our learning environment, 'teachable moments' and direct teaching to lay the foundations for the Early Learning Goals (ELG) to be achieved by the end of the of the Early Years Foundation Stage:

ELG: Number

Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

ELG: Numerical Patterns

Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Reference: [The statutory framework for the early years foundation stage, page 10](#)

Our Curricular Intention **8 'To develop number sense'** and **9. 'To develop a sense of space'** details how adults will scaffold and support children's learning as well as a progression of the skills and knowledge that children will be developing throughout their learning journey at BNSF.

Alongside these Curricular Intentions the educational programme for mathematics is also embedded within all our curricular intentions at Bedford Nursery Schools Federation.

What we offer:

At Bedford Nursery Schools Federation we use the Early Childhood Environmental Rating Scales (ECERS) to set up and review our mathematical environment.

By creating a number-rich learning environment, both indoors and outdoors, we encourage children to explore and engage with meaningful, practical maths learning. Adults provide the language and challenge to develop the children's knowledge and skills in both familiar and new contexts, encouraging problem-solving and developing confidence.

Some of the methods we use are:

- sharing mathematical concepts through stories, rhymes, poems and songs
- encouraging children to show their fingers to provide a visual representation of ECERS Item 25 (1)
- modelling mathematical vocabulary, and clearly explaining mathematical terms and concepts.
- Providing a rich and interesting environment that encourages independent thinking and problem-solving, not simply offering the 'right' answer.
- supporting maths learning as part of daily routines, for example using a calendar to learn about the passage of time, including naming the days of the week (through songs and rhymes) and their pattern, the anticipation of birthdays in the future and those already celebrated.
- group-time activities such as daily routines which include finding out the number of children present (which develops an understanding of cardinality the final number is the total amount in the group). This may incorporate a variety of methods including visual representations of the children on five and ten frames or a number track (which associate the numeral with the quantity), counting the children which supports saying the numbers in the right order (stable number strings) and 1:1 correspondence.
- visual representations of mathematical concepts throughout the nursery to support tidying.
- providing visual instructions to make paint and playdough or recipes to develop an understanding of measure as the children compare quantities and capacity.
- celebrating birthdays, for example, "I'm 4" where number is used both as a label and as a measure of age; talking about where we live ("I live at number 12") or how we get to nursery ("on the number 6 bus"), etc. These are all examples of number as "nominal" or labels.
- developing an understanding of ordinality (1st, 2nd, 3rd, etc.) through the seasonal and cultural curriculum which includes pancake races, and learning about the order of the animals winning the race in the Lunar New Year story.
- relating maths materials/activities to current topics of interest, and incorporating mathematical opportunities (such as sorting and classifying) into tidying up routines.

- engaging children in meaningful conversations and introducing challenges across all areas of the nursery (for example 'how will we share this pizza between three of us?' in the Home Corner)
- waiting for the children to be ready in purposeful situations, for example making price tickets for toys in the toy shop, writing shopping lists or recipes, recording measurements to build a den, in ways which are understandable to the children.
- discussing the properties of objects and helping children to notice differences in objects and the environment to develop their classifying and sorting skills. This also supports their understanding of the properties of shapes.
- Providing a diverse range of multi-sensory, motivational resources which take account of those with English as an additional language or who need alternative communication systems, and which promote independent learning
- Encouraging children to develop their own strategies for solving mathematical problems and to use mathematical language, including through praising their efforts in thinking about a problem, for guessing and 'having a go' (known as 'estimating' and 'conjecture').
- Ensuring both inside and outside learning environments and classroom displays are effective in promoting a mathematical culture (See ECERs item 24)
- Providing a range of appropriate resources during both free-play and adult-directed activities with adults modelling their use if necessary. These include resources to support:
- **Counting and comparing quantities:**
 - Unifix cubes with number trays
 - Small objects to use with five and ten frames
 - Dominoes
 - Playing cards
 - Games with dice
 - Pegboards
 - Puzzles where numbers are matched to quantities
 - Numicon with grids
 - Printed numbers with representations of what the number means

Measuring/comparing sizes and parts of wholes:

- Balance scales
- Rulers, tape measures
- Height charts and foot size measurers
- Games with pieces to divide and put back together (fractions)
- Puzzles with geometric shapes to be put back together, including Numicon and base boards

Familiarity with shapes:

- Shape sorters
- Puzzles with different geometric shapes
- Unit blocks with images/outlines on shelves to support tidying
- Geoboards (with rubber bands)
- Parquetry blocks or Tap-a-shape with patterns

- The development of spatial awareness through a range of gross motor resources including balance bikes, scooters and the 'Developmental Movement Play' mats.
- Free access to large hollow blocks as well as small unit blocks to encourage the exploration of position, size, shape, weight, gravity, stability, proportion, design, spanning and symmetry. (See ECERS Item 23)
- Supporting and planning for children to revisit and deepen their understanding of concepts, including links with problem-solving and real life application

Monitoring

Senior staff leaders will regularly monitor the effectiveness of the teaching and learning of early mathematics, identifying those children who would benefit from additional support and those who would benefit from further challenge to deepen their learning.

Staff evaluate at the end of each day to plan effectively for children's interests and needs. During session time, keyworkers observe children and record progress so that they can scaffold, consolidate or extend individual children's learning.

References

ECERS -Early Childhood Environment Rating Scale

ITERS – Infant/Toddler Environment Rating Scale